

Scroll Compressor Internal Components Explained

Category: Refrigeration

written by www.mbsmpro.com | January 4, 2026



When technicians open a scroll compressor casing, the real engineering lives in internal mechanisms invisible at first glance: the floating seal preventing vacuum damage, the motor protector monitoring temperature and amperage, the pressure relief valve, the discharge check valve preventing reverse rotation, and the optimized bearing system. Understanding these core components transforms your diagnostic confidence.

Donper K400CZ1 R134a compressor

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The Donper K400CZ1 is a hermetic reciprocating compressor designed for commercial refrigerators and chest freezers operating with refrigerant R134a on 220-240V 50Hz single-phase power. It offers roughly 1/2 hp class performance with about 400 W cooling capacity, making it suitable for medium-size display cabinets and storage equipment in supermarkets and restaurants.

[Start Run Capacitor Failure, Causes](#)

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An AC motor run capacitor such as the CBB65 SH usually explodes when it is forced to work beyond its electrical or thermal limits, or when the start-assist components fail and leave it in the circuit too long. This overstress breaks down the dielectric, creates internal gas and pressure, and finally ruptures the can.

[Danfoss Compressor HP Chart - TFS, FR, SC Model Reference](#)

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When a refrigerator or freezer arrives with a worn nameplate, identifying the compressor becomes difficult. The Danfoss and Secop model codes—such as TFS 4 AT, FR 8.5A, or SC 18B—tell you exactly what you’re dealing with. This chart breaks down those codes into horsepower, watt consumption, and amp ratings for fast diagnosis.

[Tecumseh Commercial Refrigeration](#)

Compressors

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Tecumseh commercial compressors range from 1/9 HP (230 W) to 3 HP (4,000 W), delivering refrigeration capacities from 278 W to 6,973 W across R404A, R134a, and legacy refrigerants. This complete technical guide provides exact horsepower, input wattage, evaporating ranges, and application types for all ten major models used in supermarkets, walk-ins, and retail coolers.

Champion of HBP: Copeland KCJ513HAG-S424H

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The Copeland KCJ513HAG-S424H is a powerhouse 1.2 HP compressor designed for high-demand cooling. Built for R134a applications like large water coolers and AC units, it delivers 12,300 Btu/h reliability. This guide covers its CSCR electrical setup, 38cc displacement, and how it compares to Tecumseh alternatives.

R134a vs. R600a Compressor Conversion

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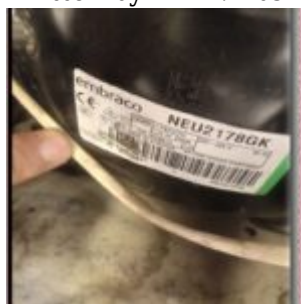


Switching from R134a to R600a requires more than just changing the gas. This guide explains the critical “Displacement Rule”—why R600a compressors need nearly double the cylinder volume of R134a units to produce the same cooling. We cover charge calculation (45% rule), oil compatibility, and safety protocols for the modern artisan.

[Embraco NEU2178GK, compressor](#)

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The Embraco NEU2178GK is the definitive choice for 1 HP commercial freezing applications. Featuring a robust CSR motor and 16.8cc displacement, this R404A compressor delivers high starting torque for demanding environments. This guide details the electrical requirements, installation tips, and how it compares to Secop and Tecumseh alternatives.

[Fitco Wired & Wireless Smart Kit](#)

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The ECQ VP115 Vacuum Pump

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The ECQ Vacuum Pump VP115 is the ideal tool for the artisan bricoleur. With 2 CFM displacement and a durable 1/4 HP motor, it perfectly balances portability and power for residential AC and fridge repairs. This guide covers specifications, maintenance, and why 100% copper winding matters for your daily work.